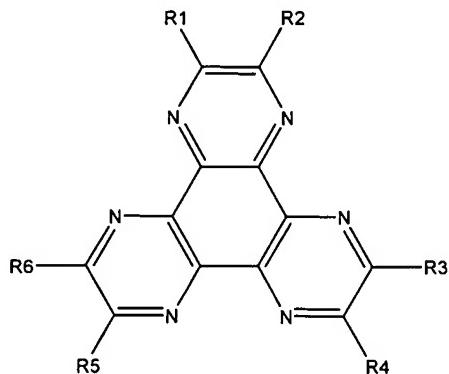


WHAT IS CLAIMED IS:

1. An electroluminescent device, comprising:
 - a cathode;
 - an anode opposing the cathode, the anode comprising a material having a work function not greater than about 4.5 eV; and
 - a functional layer located between the anode and cathode, the functional layer comprising a chemical compound of Formula I:



Formula I,

wherein R1-R6 are independently chosen from the group consisting of hydrogen, halo, nitrile ($-CN$), nitro ($-NO_2$), sulfonyl ($-SO_2R$), sulfoxide ($-SOR$), sulfonamide ($-SO_2NR$), sulfonate ($-SO_3R$), trifluoromethyl ($-CF_3$), ester ($-CO-OR$), amide ($-CO-NHR$ or $-CO-NRR'$), straight-chain or branched (substituted or unsubstituted) C_1-C_{12} alkoxy, straight-chain or branched (substituted or unsubstituted) C_1-C_{12} alkyl, aromatic or non-aromatic (substituted or unsubstituted) heterocyclic, substituted or unsubstituted aryl, mono- or di-(substituted or unsubstituted)aryl-amine, and (substituted or unsubstituted)alkyl-(substituted or unsubstituted)aryl-amine.

2. The device of Claim 1, wherein the work function of the material in the anode ranges from about 3.5 eV to about 4.5 eV.

3. The device of Claim 1, wherein the chemical compound has a reduction potential ranged from about -0.6V to about 0 V.

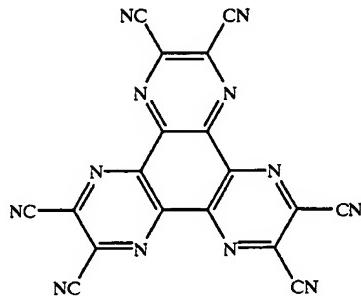
4. The device of Claim 1, wherein the chemical compound is more stable in a reduced state thereof than in a neutral state thereof.

5. The device of Claim 1, wherein the chemical compound has an electron

mobility from about 10^{-10} cm/V.s to about 10^{-5} cm/V.s.

6. The device of Claim 1, wherein the chemical compound has a hole mobility from about 10^{-4} cm/V.s to about 1 cm/V.s.

7. The device of Claim 1, wherein the chemical compound is Formula Ia:



Formula Ia.

8. The device of Claim 1, wherein the functional layer is configured to facilitate movement of charge carriers from the anode in a direction toward the cathode.

9. The device of Claim 1, wherein the functional layer substantially contacts the anode.

10. The device of Claim 1, wherein the anode is made substantially of one or more conductive materials, and wherein the device further comprises an intervening layer between the functional layer and the anode.

11. The device of Claim 10, wherein the intervening layer comprises one or more metallic oxides.

12. The device of Claim 1, wherein the functional layer comprises the chemical compound of Formula I in an amount ranging from 1 wt% to 100 wt%.

13. The device of Claim 1, wherein the functional layer has a thickness from 0.1 nm to 10,000 nm.

14. The device of Claim 1, further comprising a light-emitting layer between the cathode and the functional layer.

15. The device of Claim 1, further comprising a substrate, wherein the anode is located between the substrate and the functional layer.

16. The device of Claim 1, wherein the anode comprises a transparent material.

17. The device of Claim 1, wherein the anode comprises a metal oxide material.

18. The device of Claim 1, further comprising a substrate, wherein the cathode is located between the substrate and the functional layer.

19. The device of Claim 1, wherein the cathode comprises a transparent material.

20. The device of Claim 1, wherein the anode comprises an opaque material.

21. The device of Claim 1, wherein the anode comprises a reflective material having a reflectivity from about 0.3 to about 1.

22. The device of Claim 21, wherein the reflective material is reflective to substantially all wavelengths of visible light.

23. The device of Claim 1, wherein the anode comprises at least one material selected from the group consisting of aluminum, silver, platinum, chromium and nickel.

24. The device of Claim 1, wherein the anode comprises aluminum.

25. A display comprising:

the electroluminescent device of Claim 1; and

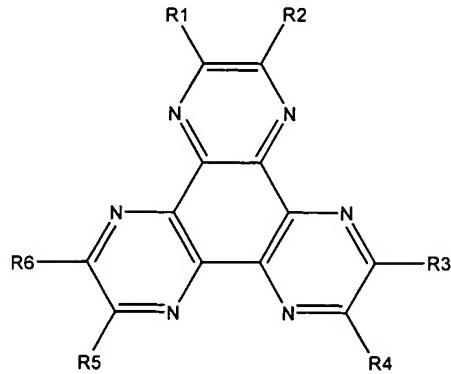
an electronic circuit connected to the electroluminescent device.

26. An electroluminescent device, comprising:

a cathode;

an anode opposing the cathode, the anode comprising a substantially reflective material; and

a functional layer located between the anode and cathode, the functional layer comprising a chemical compound of Formula I:



Formula I,

wherein R1-R6 are independently chosen from the group consisting of hydrogen, halo, nitrile ($-CN$), nitro ($-NO_2$), sulfonyl ($-SO_2R$), sulfoxide ($-SOR$), sulfonamide ($-SO_2NR$), sulfonate ($-SO_3R$), trifluoromethyl ($-CF_3$), ester ($-CO-OR$),

amide ($-CO-NHR$ or $-CO-NRR'$), straight-chain or branched (substituted or unsubstituted) C₁-C₁₂ alkoxy, straight-chain or branched (substituted or unsubstituted) C₁-C₁₂ alkyl, aromatic or non-aromatic (substituted or unsubstituted) heterocyclic, substituted or unsubstituted aryl, mono- or di-(substituted or unsubstituted)aryl-amine, and (substituted or unsubstituted)alkyl-(substituted or unsubstituted)aryl-amine.

27. The device of Claim 26, wherein the substantially reflective material has a reflectivity from about 0.4 to about 1.

28. The device of Claim 26, wherein the substantially reflective material is selected from the group consisting of aluminum, silver, gold, nickel, chromium, molybdenum, tantalum, titanium, and zinc.

29. The device of Claim 26, wherein the substantially reflective material is reflective to substantially all of the wavelength components of visible light.

30. An electronic display comprising:

the electroluminescent device of Claim 26; and

an electronic circuit connected to the electroluminescent device.

31. An electroluminescent device, comprising:

an anode formed substantially of a conductive material having a work function not greater than about 4.5 eV;

a cathode electrode opposing the anode and formed substantially of a conductive material;

at least one light-emitting layer located between the anode and cathode;

wherein the anode is configured to inject holes in a direction toward the at least one light-emitting layer, whereas the cathode is configured to inject electrons in a direction toward the at least light-emitting layer;

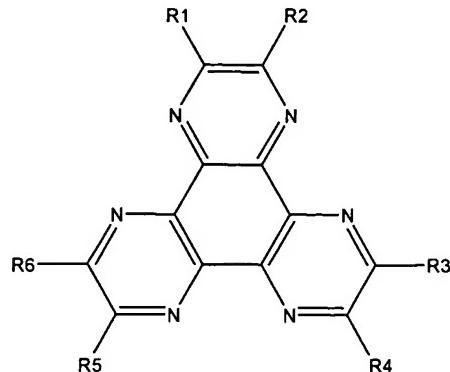
a buffer layer contacting either the anode or cathode on a side thereof toward the at least one light-emitting layer; and

wherein the buffer layer is formed substantially of at least one substantially non-conductive material.

32. The device of Claim 31, wherein the buffer layer contacts the anode.

33. The device of Claim 32, wherein the anode comprises aluminum, and wherein the buffer layer comprises aluminum oxide.

34. The device of Claim 32, further comprising a hole-injecting layer located between the buffer layer and the at least one light-emitting layer, wherein the hole-injecting layer comprises a chemical compound of Formula I:



Formula I,

wherein R1-R6 are independently chosen from the group consisting of hydrogen, halo, nitrile ($-CN$), nitro ($-NO_2$), sulfonyl ($-SO_2R$), sulfoxide ($-SOR$), sulfonamide ($-SO_2NR$), sulfonate ($-SO_3R$), trifluoromethyl ($-CF_3$), ester ($-CO-OR$), amide ($-CO-NHR$ or $-CO-NRR'$), straight-chain or branched (substituted or unsubstituted) C_1-C_{12} alkoxy, straight-chain or branched (substituted or unsubstituted) C_1-C_{12} alkyl, aromatic or non-aromatic (substituted or unsubstituted) heterocyclic, substituted or unsubstituted aryl, mono- or di-(substituted or unsubstituted)aryl-amine, and (substituted or unsubstituted)alkyl-(substituted or unsubstituted)aryl-amine.

35. The device of Claim 32, further comprising another buffer layer contacting the cathode and located between the cathode and the at least one light-emitting layer.

36. The device of Claim 31, wherein the buffer layer has a substantially small thickness sufficient to allow holes to pass therethrough.

37. The device of Claim 31, wherein the buffer layer has a thickness from about 5 Å to about 40 Å.

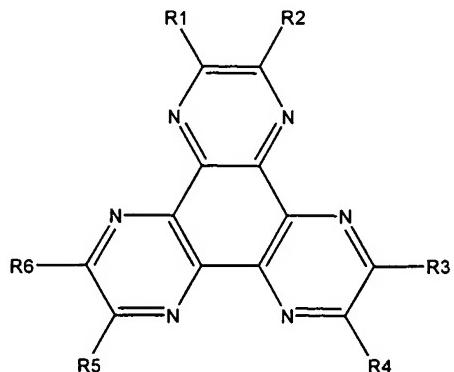
38. The device of Claim 31, wherein the buffer layer has a thickness from about 10 Å to about 20 Å.

39. The device of Claim 31, wherein the at least one substantially non-conductive

material is selected from the group consisting of aluminum oxide, titanium oxide, zinc oxide, ruthenium oxide, nickel oxide, zirconium oxide, tantalum oxide, magnesium oxide, calcium oxide, strontium oxide, vanadium oxide, yttrium oxide, lithium oxide, cesium oxide, chromium oxide, silicon oxide, barium oxide, manganese oxide, cobalt oxide, copper oxide, praseodymium oxide, tungsten oxide, germanium oxide, potassium oxide, lithium fluoride, magnesium fluoride, cesium fluoride, calcium fluoride, sodium chloride, potassium chloride, lithium metaborate (BiBO_2), potassium silicate (K_2SiO_3), silicon-germanium oxides, barium titanate, lithium tantalate (LiTaO_3), silicon nitride (Si_3N_4), boron nitride (BN), nitrides of elements in Family III or IV of the Periodic Table of the Elements, zinc sulfide (ZnS), cadmium sulfide (CdS), cadmium selenide (CdSe), gallium phosphide (GaP) and gallium nitride (GaN).

40. A display comprising:
 - the electroluminescent device of Claim 31; and
 - an electronic circuit connected to the electroluminescent device.
41. An electroluminescent device comprising:
 - an anode comprising an anode material;
 - a cathodes comprising a cathode material;
 - at least one layer between the anode and the cathode; and

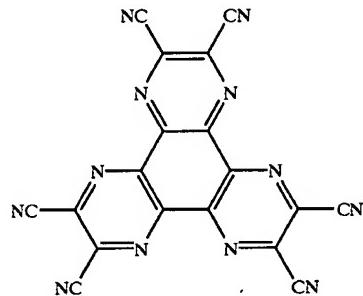
wherein the anode material has the work function less than or substantially equal to the work function of the cathode material.
42. The device of Claim 41, wherein the anode material and the cathode material are the same.
43. The device of Claim 41, wherein the at least one layer comprises a chemical compound of Formula I:



Formula I,

wherein R1-R6 are independently chosen from the group consisting of hydrogen, halo, nitrile ($-CN$), nitro ($-NO_2$), sulfonyl ($-SO_2R$), sulfoxide ($-SOR$), sulfonamide ($-SO_2NR$), sulfonate ($-SO_3R$), trifluoromethyl ($-CF_3$), ester ($-CO-OR$), amide ($-CO-NHR$ or $-CO-NRR'$), straight-chain or branched (substituted or unsubstituted) C₁-C₁₂ alkoxy, straight-chain or branched (substituted or unsubstituted) C₁-C₁₂ alkyl, aromatic or non-aromatic (substituted or unsubstituted) heterocyclic, substituted or unsubstituted aryl, mono- or di-(substituted or unsubstituted) aryl-amine, and (substituted or unsubstituted) alkyl-(substituted or unsubstituted) aryl-amine.

44. The device of Claim 41, wherein the at least one layer comprises a chemical compound of Formula Ia:



Formula Ia.

45. A display comprising the electroluminescent device of Claim 41.
46. An organic electroluminescent device, comprising:
 - an anode;
 - a cathode;
 - an anode contacting layer contacting the anode between the anode and cathode;
 - a cathode contacting layer contacting the cathode between the anode and cathode; and
 - means for forming a virtual electrode within at least one of the anode contacting layer and the cathode contacting layer.